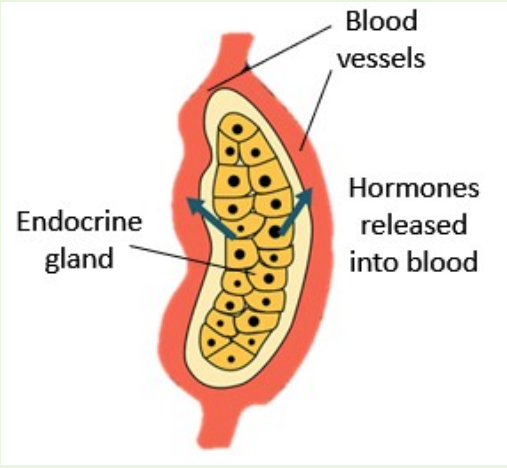
Glandular Epithelia

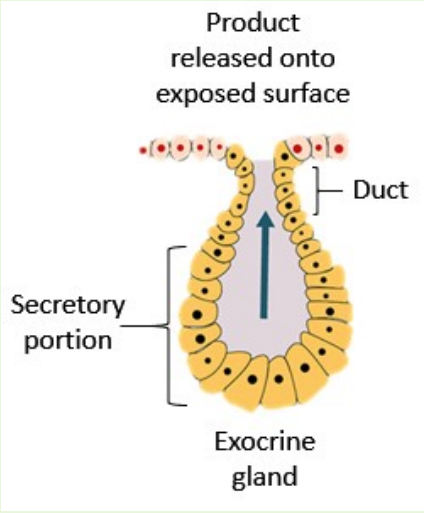
- **Endocrine Glands**

  Secretes hormones directly into interstitium then <u>into blood stream</u>. These glands have <u>no ducts</u>. Hormones travel via blood stream all over body, only have effect on tissues with <u>receptors</u> for that hormone = "target tissue".



- **Exocrine Glands**

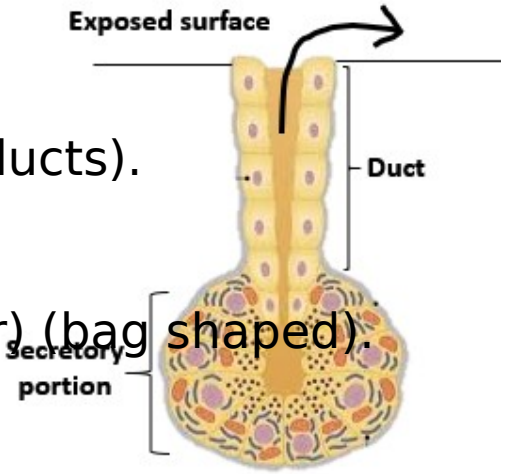
  Secretions made by cells and discharged through <u>ducts</u> onto an <u>exposed surface</u>.



- **<u>Exocrine</u> Glands can be Classified by:**
  - **Structure** of gland
  - **Type** of secretion produced
  - **Mode** of secretion

Classifications of Exocrine Glands

How many cells? One cell = Unicellular. Many cells = Multicellular.



1. <u>Structure</u> <u>(of multicellular) glands</u>:

1) Simple (one duct) or **Compound** (many ducts).

2) Shape od Secretory portion:

Tubular (tube shaped) or **Acinar** (Alveolar) (bag shaped).

2. <u>Mode</u> <u>of Secretion</u>:

1) Merocrine

2) Apocrine

3) Holocrine

3. <u>Type</u> <u>of Secretion</u>:

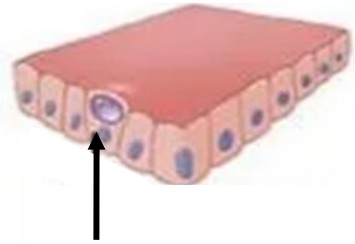
1) Serous – sweat glands, parotid salivary gland

2) Mucous – sublingual salivary gland

3) Mixed – submandibular salivary gland

*Sebum
*Apocrine sweat
*Cerumen
*Milk

Structural Classification of Simple and Compound Exocrine Glands



a) Unicellular (goblets cells of GI, respiratory tract

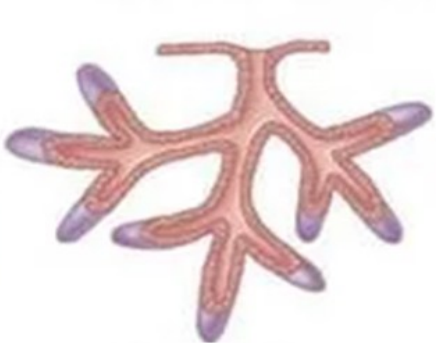
b) Simple tubular (stomach, colon)

c) Simple branched tubular (stomach)

d) Simple coiled tubular (merocrine, apocrine sweat glands)

e) Simple acinar

f) Simple branched acinar (sebaceous glands)



g) Compound tubular (mucous glands duodenum)

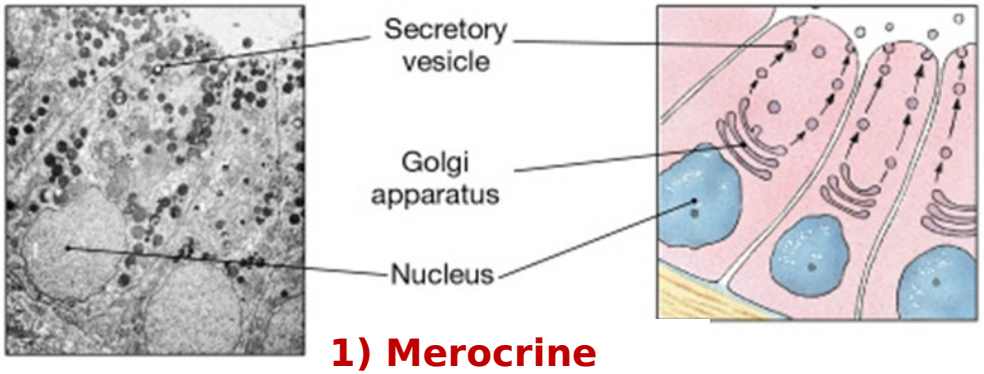
h) Compound acinar (mammary glands)

i) Compound tubuloacinar (pancreas)

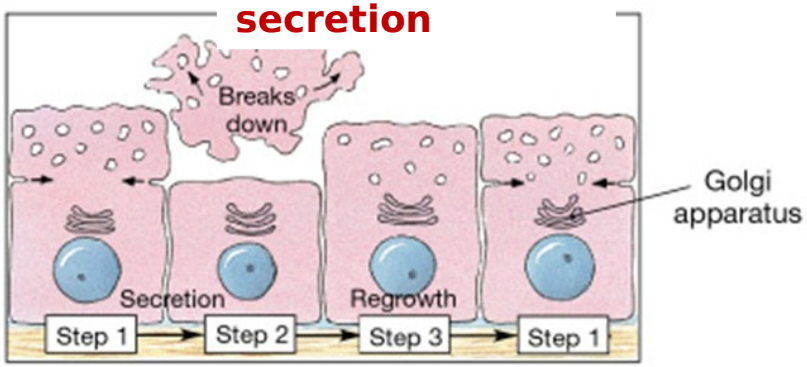
Modes of Secretion from Exocrine Glands

- **Merocrine** (eccrine) Secretion
  - Exocytosis (vesicles fuse with PM and release contents from cell.
  - Most common mode of secretion.
- **Apocrine** Secretion
  - Exocytosis but lipid rich content and can function as pheromones (‘scent glands’).
- **Holocrine** Secretion
  - Involves entire cell, fills with vesicles and bursts, destroys the cell. Cell debris part of product.

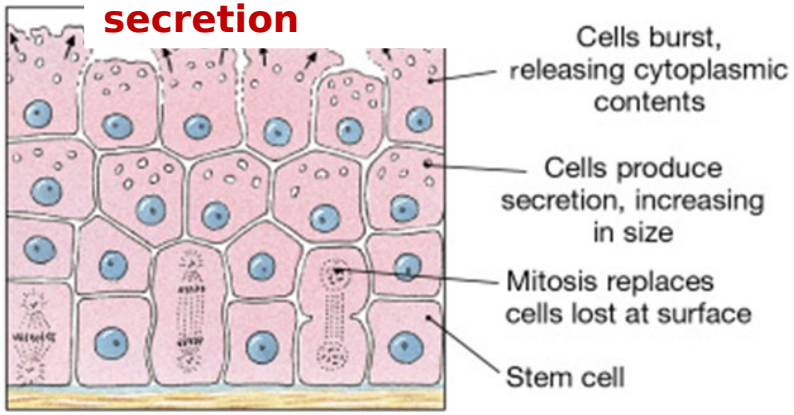
Modes of Secretion



1) Merocrine secretion



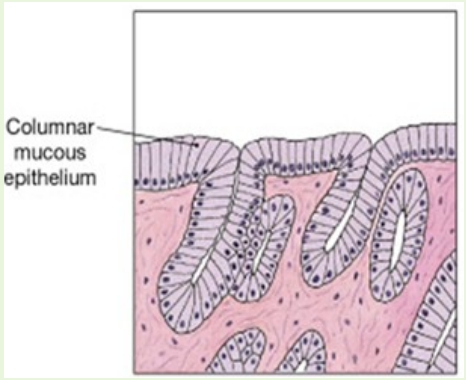
2) Apocrine secretion


Cells burst, releasing cytoplasmic contents
Cells produce secretion, increasing in size
Mitosis replaces cells lost at surface
Stem cell

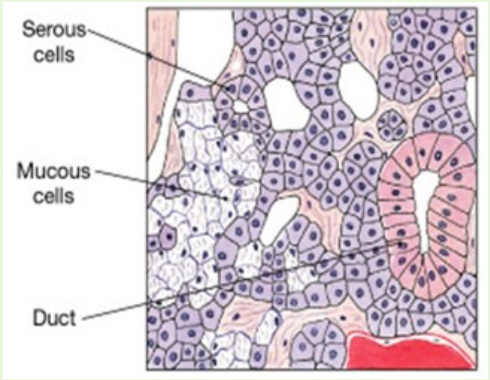
3) Holocrine secretion

Types of Secretion

Mucous – thick, sticky, viscous solution.



Serous – watery, slippery, thin solution.



Mixed – contains elements of both mucous and serous solutions.

Tissue Membranes

$$\text{Tissue} = \frac{\text{Epithelial}}{\text{Connective}}\ \text{Tissue}$$

Membranes function to cover and protect body.

3 Types of Epithelial Membranes

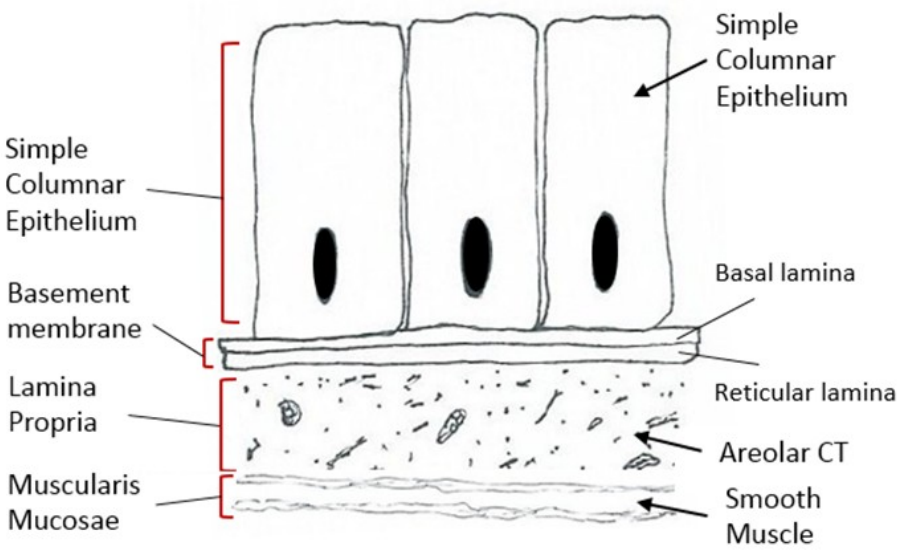
- Cutaneous
- Mucous
- Serous

Mucous Membranes

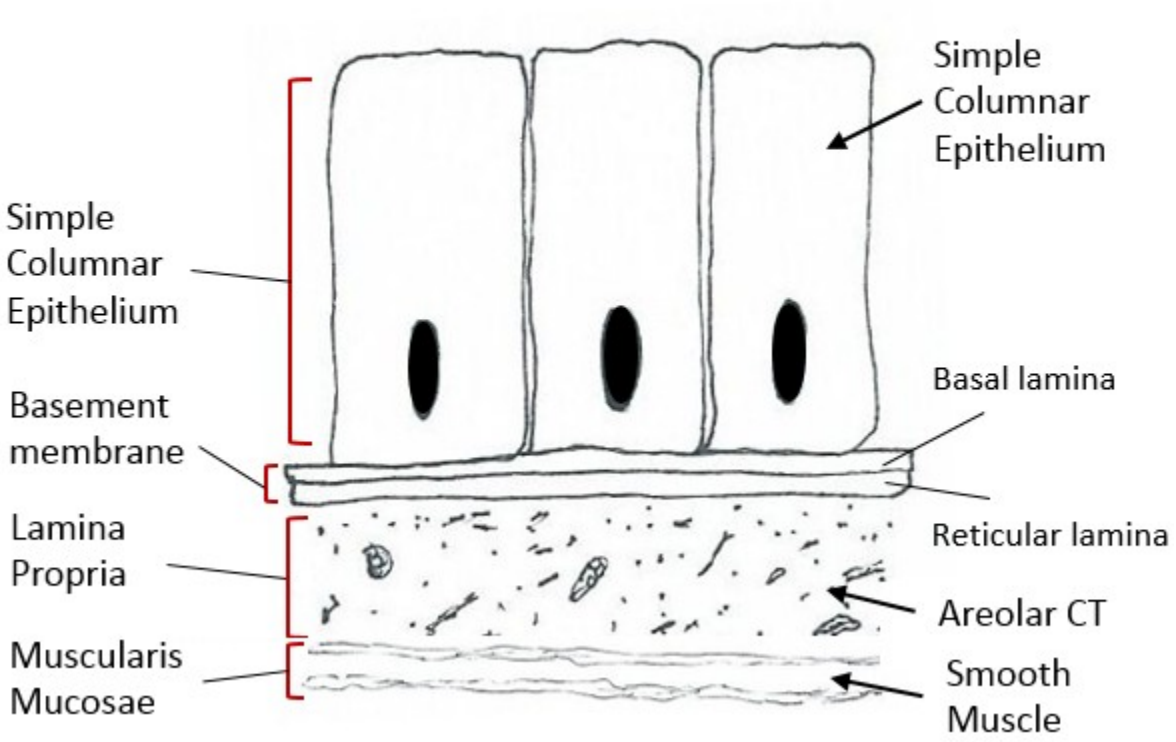
- Line passageways that open to exterior.
- Moistened by mucous (mucin + H_2O).

- 3 Layers:
  - Epithelium (simple or stratified)
  - Areolar CT called ‘Lamina Propria’
  - Smooth Muscle called ‘Muscularis Mucosae’

- Roles
  - Protection
  - Absorption
  - Secretion

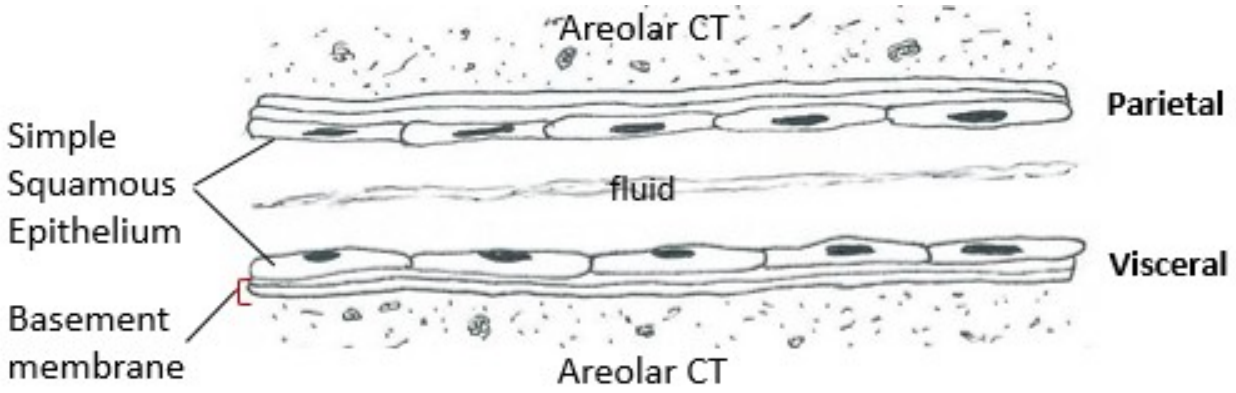


Mucous Membrane



Serous Membranes

- Lines internal body cavities.
- Thin, watery, serous fluid (transduate).
- 2 layers:
  - Simple Squamous Epithelium (*Mesothelium*).
  - Thin areolar C.T. (subserous fascia).

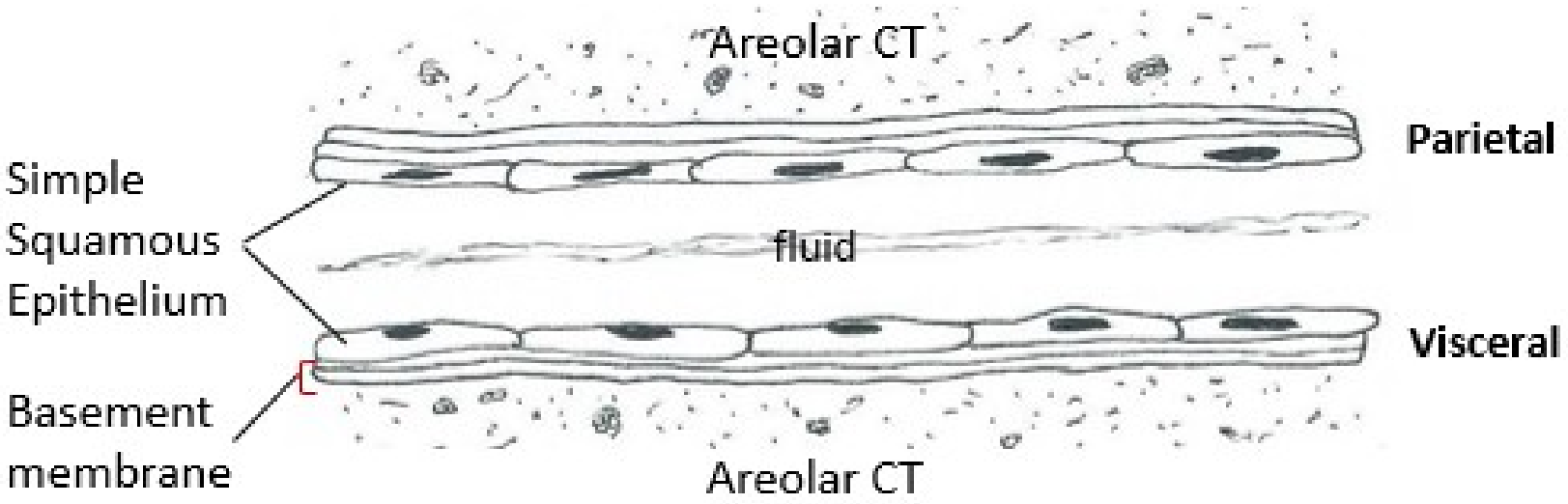


Role:

Reduce friction of two surfaces moving across each other.

1) Pleura, **2)** Pericardium and **3)** Peritoneum

Serous Membrane

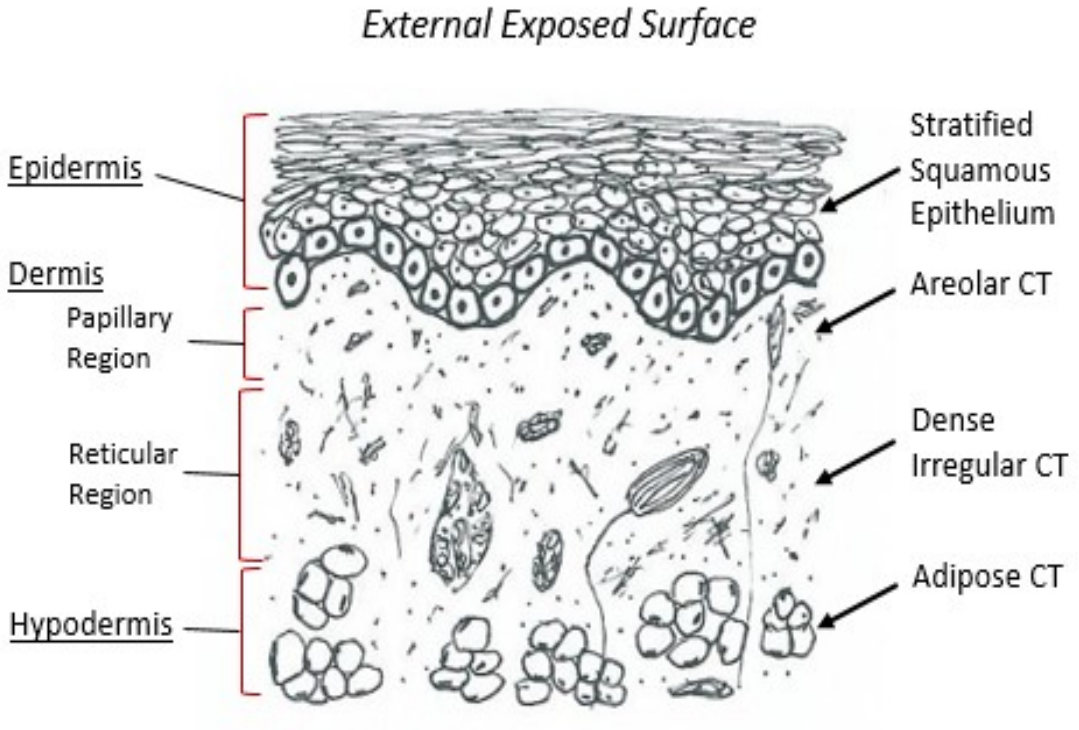


Serous Membranes

Internal body cavities are lined with membranes that produce serous secretions.

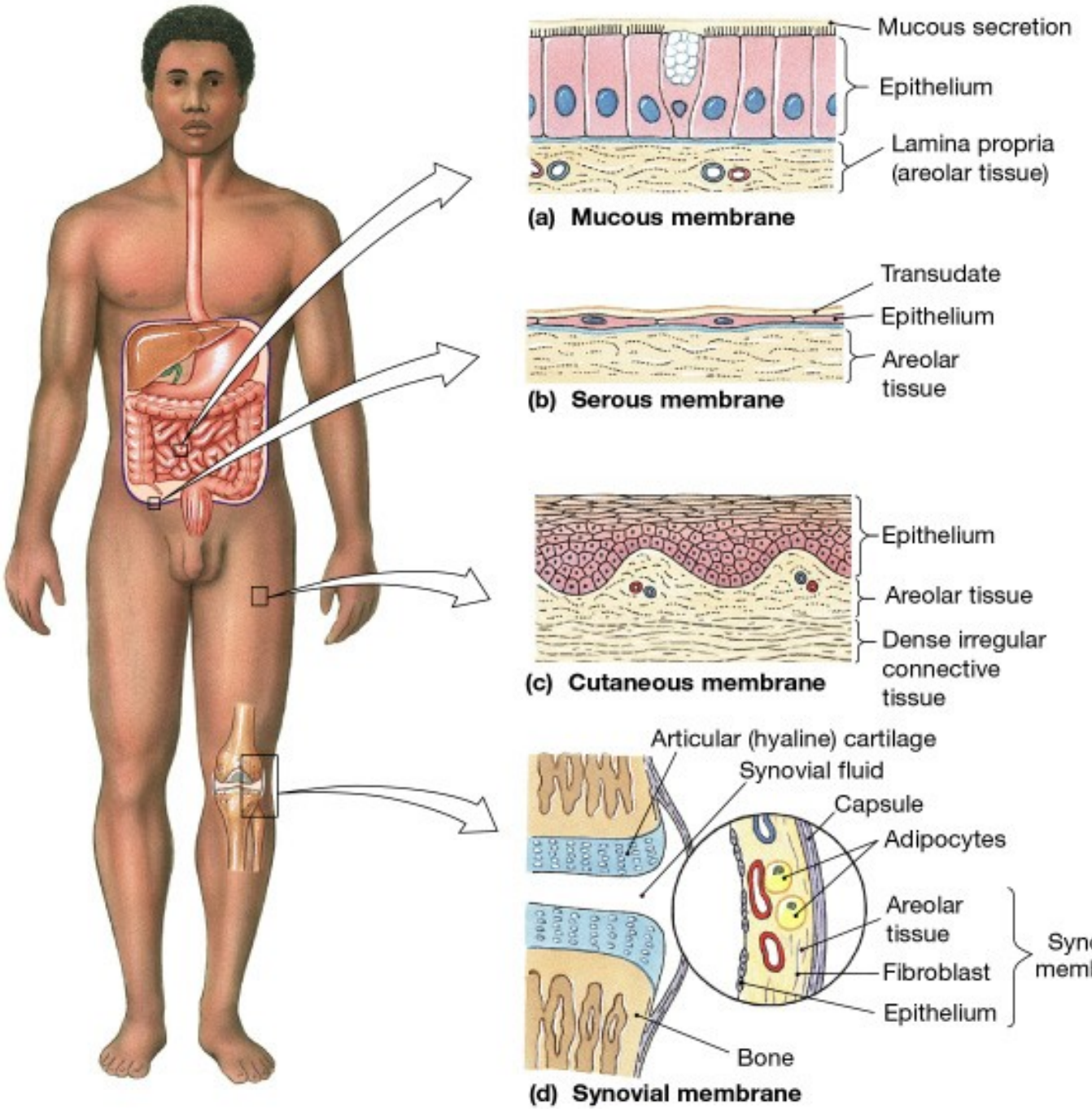
Cutaneous Membranes

- Covers external surface of body.
- A “dry” membrane, preventing dehydration.
- 2 Main Layers:
  - Epithelium (Keratinized Stratified Squamous), this is called the Epidermis.
  - Areolar and Dense Irregular CT make up the Dermis.



- **Roles**

Physical protection
Prevents water loss
Detection of sensations
Thermoregulation
Production of vitamin D



Mucous

Serous

Cutaneous

Connective Tissue

Synovial Membrane

Fasciae

Composed of Layers of fibrous C.T. in between various tissues.

Roles:

1) Provides stability, maintains relative positions of organs.

2) Allows for distribution of blood, lymph vessels and nerves.

All organ systems are interconnected

There are 3 types of **Fasciae**

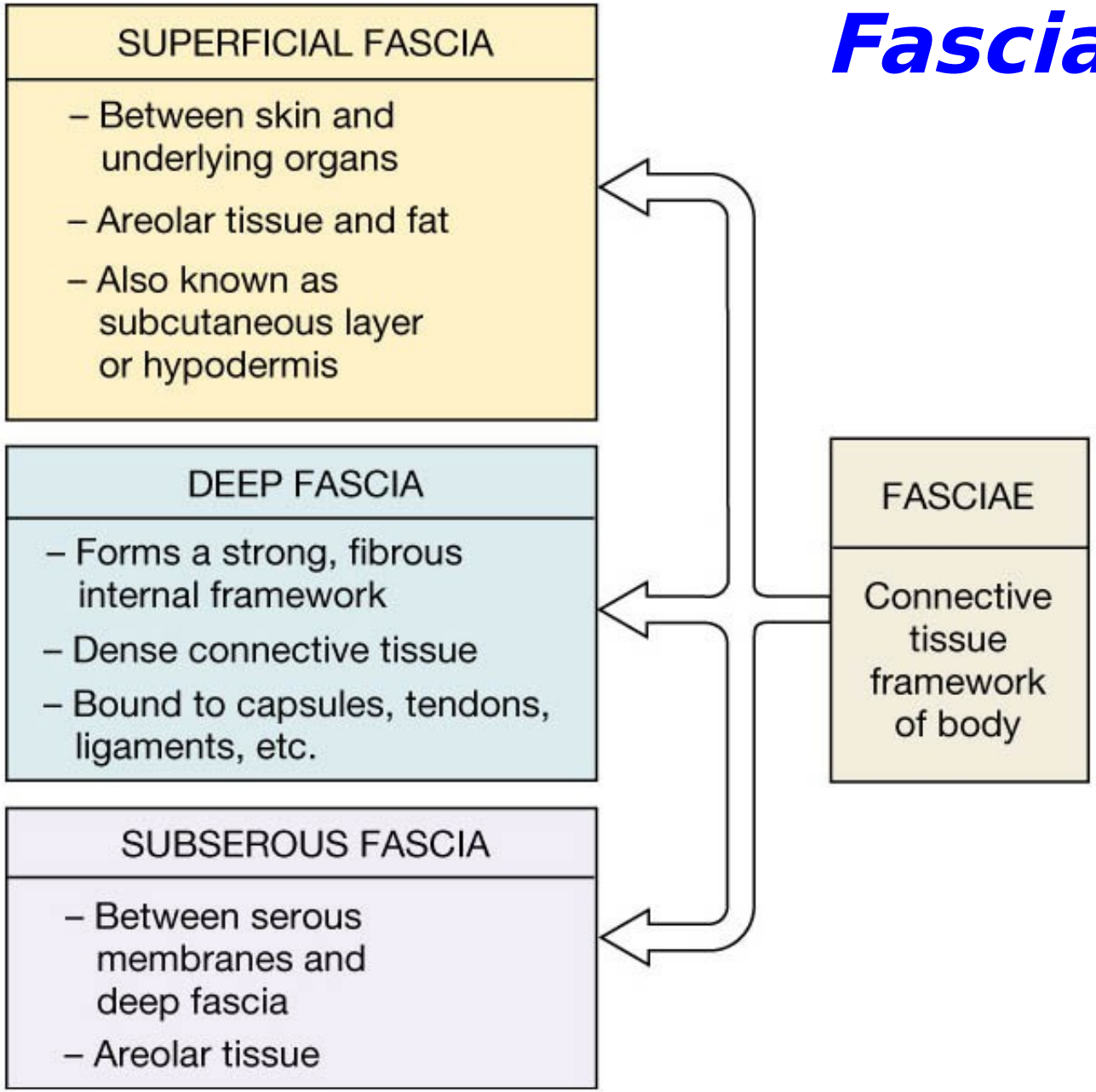
1. Superficial Fascia

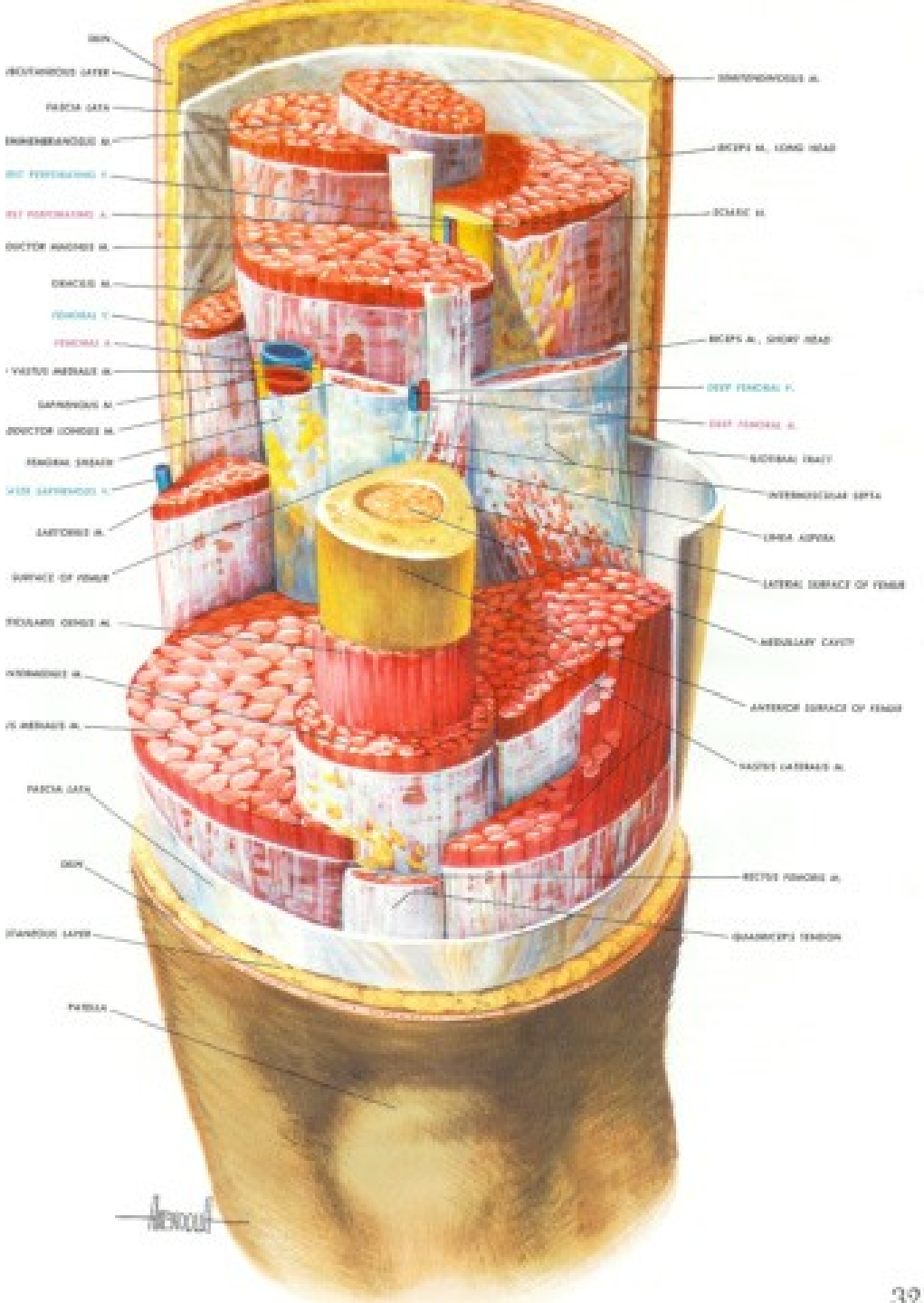
2. Deep Fascia

3. Subserous Fascia

- Superficial Fascia *(hypodermis)*
  - Subcutaneous layer (adipose and dense irreg).
  - Insulation, padding, allows movement.
- Deep Fascia
  - Dense connective tissue, lots of collagen.
  - Many layers with varying orientations.
- Subserous Fascia
  - Areolar connective tissue.
  - In between deep fascia and serous membrane.

Fasciae


SUPERFICIAL FASCIA
– Between skin and underlying organs
– Areolar tissue and fat
– Also known as subcutaneous layer or hypodermis
DEEP FASCIA
– Forms a strong, fibrous internal framework
– Dense connective tissue
– Bound to capsules, tendons, ligaments, etc.
SUBSEROUS FASCIA
– Between serous membranes and deep fascia
– Areolar tissue
FASCIAE
Connective tissue framework of body


SEMITENDINOSUS M.
BICEPS M., LONG HEAD
ADDUCTOR MAGNUS M.
BICEPS M., SHORT HEAD
DEEP FEMORAL V.
DEEP FEMORAL A.
SARTORIUS M.
LINEA ASPERA
LATERAL SURFACE OF FEMUR
MEDULLARY CAVITY
ANTERIOR SURFACE OF FEMUR
VASTUS LATERALIS M.
FASCIA LATA
SKIN
RECTUS FEMORIS M.
QUADRICEPS TENDON
PATELLA

Locations of the 3 Fasciae